



# I-90 Snoqualmie Pass East Hyak to Easton Project



Click on the links  
below to begin:

- Welcome
- Purpose and Need
- Public Involvement
- Public Works
- Preferred Alternative
- Design Concepts
- Transportation
- Construction Phasing
- Ecological Connectivity
- Wildlife Monitoring
- Mitigation Commitments
- Historic
- Recreation

## Moving More Than People



## OPEN HOUSE

Virtual Open House  
September 18, 2008  
4:00 pm - 7:00 pm




### Final Environmental Impact Statement

September 2008

[www.wsdot.wa.gov/projects/I90/SnoqualmiePassEast](http://www.wsdot.wa.gov/projects/I90/SnoqualmiePassEast)

# Integrating Stewardship into the Highway Design



Transportation  
Engineering (design) challenges  
Fish  
Wildlife  
Wetlands  
Air quality  
Water resources  
Noise  
Economics  
Recreation

Open  
*Welcome to our* House

September 2008

Final Environmental Impact Statement

Navigate



home



back



continue





# I-90 Snoqualmie Pass East Hyak to Easton Project

Final Environmental Impact Statement

September 2008



# PURPOSE AND NEED

*How will WSDOT protect the public and improve the highway?*

**The I-90 Snoqualmie Pass East Project addresses five major needs.**

- I-90 is frequently closed due to avalanche control work. These closures result in safety hazards and economical impacts.
- Several unstable slopes have been identified on I-90. These slopes pose a threat to property and safety.
- I-90 forms a barrier to wildlife movement. Improving ecological connectivity will reduce risks to wildlife and the public.
- Traffic volumes on I-90 are increasing at 2.1 percent per year. High traffic volumes may lead to more accidents, economic impacts, and increased travel times.
- The pavement on I-90 is beyond its design life and is rapidly deteriorating. This will result in unsafe driving conditions, increased vehicle damage, travel delay, and eventual failure of the roadway.

Avalanche Closures



Slope Instability



Ecological Connectivity



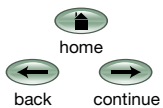
Traffic Volumes



Structural Deficiencies



Navigate



I-90 Snoqualmie Pass East



# I-90 Snoqualmie Pass East Hyak to Easton Project



# PUBLIC INVOLVEMENT

## Public meetings



Photos from left to right: Brian White and Jason Smith speak at open house. Keeping Snoqualmie Pass Open public open house. Jason Smith presents at the Snoqualmie Pass Open House. I-90 Project members talk with the public at the Draft Environmental Impact Statement Open House in 2005.

## How has WSDOT communicated the project?

WSDOT's public involvement effort exceeds what is required by the National Environmental Policy Act and State Environmental Policy Act. The I-90 Project team hosted several public meetings and open houses, and has participated in numerous fairs, festivals, town hall meetings, and other community events. Our goals are to inform people about the project, and listen to concerns and suggestions.

Navigate



home



back



continue

## Project field trips / tours



Photos from left to right: Jason Smith gives a field tour of the project area. Brian White speaks to the media about pass closures.

## Educational outreach



Photos from left to right: Environmental Planner Brian Smith presents information and education to students about Snoqualmie Pass. Former Secretary of Transportation Doug McDonald, I-90 Project Director Brian White and I-90 Wildlife Bridges Coalition Director Charles Brown present an award to a student for her depiction of a wildlife crossing. Brian White presents to elementary students at Salmon Days. Brian White and Senator Patty Murray's office present an award at the Bridging Futures Conference. Assistant Environmental Manager Larry Mathews gives an Educational Connectivity presentation at an Environmental Camp. Jason Smith lectures students about water quality.

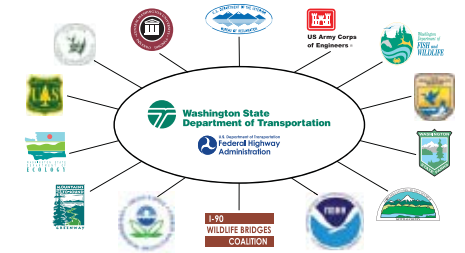
## Who are WSDOT's partners?

WSDOT and FHWA have collaborated and coordinated with federal, state, local agencies, tribes, educational institutions and interest groups about the projects affects.

## Festival and Fair outreach



Photos from left to right: Brian White discusses the project with the community at Skagitway Days 2008. Brian White discusses the Snoqualmie Pass Corridor. Brian White talks to the public at Salmon Days about the impact of the I-90 Project and surrounding WSDOT projects. I-90 Project Communications Director explains the project needs to people at Snoqualmie Railroad Days 2007.



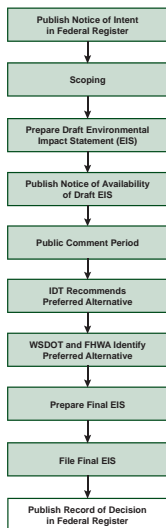


# I-90 Snoqualmie Pass East Hyak to Easton Project



## STEPS ON LARGE PUBLIC WORKS PROJECT

### The EIS Process



Completed Step

### What planning has taken place?

Planning for the I-90 Snoqualmie Pass East project started in May 1996. Since 1996, FHWA and WSDOT have worked with agencies and the public to develop and consider a range of potential solutions to the project needs.

Photos from left to right: IDT meets at Hudson Creek in the field; IDT meeting to discuss CEA options; NMT meets in 2005 to discuss alternatives



### Process of Development

Design %	0%	10%	30%	60 %	90%	100%	M/O
Steps	Scoping	Preliminary Design and Environmental Documentation	Design and Environmental Permitting	Contract Development and Mitigation Plans	Final Contract	Construction	Maintenance & Operations
Processes	<ul style="list-style-type: none"><li>Public Hearings</li><li>Form IDT</li><li>Develop Study Plan</li><li>Develop Communications Plan</li><li>Begin Engineering Investigations</li><li>Begin Environmental Investigations</li><li>Identify Alternatives</li><li>Begin Cost Estimation</li></ul>	<ul style="list-style-type: none"><li>Begin Right-of-Way Investigations</li><li>Preliminary Impact Analysis</li><li>Publish Draft EIS</li><li>Identify Mitigation Needs and Opportunities</li><li>Begin Contract Plans, Specifications and Estimates</li><li>Refine Cost Estimates</li></ul>	<ul style="list-style-type: none"><li>Identify Preferred Alternative</li><li>Refine Cost Estimates</li><li>Publish Final EIS</li><li>Publish Record of Decision</li><li>Begin Right-of-Way Acquisition</li><li>Submit Permit Applications &amp; Mitigation Plans</li><li>Document Commitments</li><li>Begin Federal Land Transfer(s)</li><li>Contract Plans, Specifications and Estimates 30% Complete</li></ul>	<ul style="list-style-type: none"><li>Develop Final Mitigation Plan(s)</li><li>Negotiate Permit Conditions and Stipulations</li><li>Begin Tracking Project Commitments</li><li>Begin Pre-Construction Monitoring</li><li>Contract Plans, Specifications and Estimates 60% Complete</li></ul>	<ul style="list-style-type: none"><li>Finalize Right-of-Way Acquisition</li><li>Receive Permits</li><li>Advertise Contract</li><li>Award Contract</li><li>Continue Tracking Project Commitments</li><li>Finalize Mitigation Plans</li><li>Contract Plans, Specifications and Estimates 90% Complete</li></ul>	<ul style="list-style-type: none"><li>Begin Construction</li><li>Monitor Construction</li><li>Monitor Mitigation &amp; Permit</li><li>Compliance</li><li>Finish Construction</li><li>Continue Tracking Project Commitments</li></ul>	<ul style="list-style-type: none"><li>Begin Maintenance &amp; Operations</li><li>Monitor Mitigation Sites</li><li>Maintain Highway</li><li>Adaptive Management and Wildlife Monitoring</li></ul>

Navigate



home



back



continue



I-90 Snoqualmie Pass East







## TWO DECISIONS

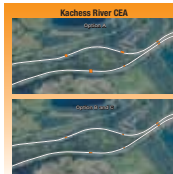
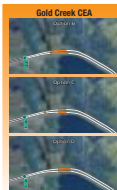
The I-90 Snoqualmie Pass East Project Final EIS identifies two decisions that FHWA and WSDOT must make when selecting an alternative for construction:



## DECISION 1

**Keechelus Lake Alignment**  
along 15-mile corridor

The first decision is how to address avalanche, rockfall and roadway improvements within the Keechelus Lake Alignment. Four alternatives were considered, which included two tunnel designs, and / or an expanded snowshed that covers all six lanes and the avalanche chutes.



## DECISION 2

### Connectivity Emphasis Areas (CEAs)

The primary decision for this part of the project was how the lead agencies would meet the project's ecological connectivity needs, primarily at stream crossings. Many of the CEAs are located at stream crossings, although some were located away from streams at known terrestrial wildlife crossing areas. WSDOT developed design options for improvements at each CEA based on connectivity objectives. Design options include larger culverts, building bigger bridges, etc.

**PREFERRED ALTERNATIVE**



NOTE: CEA borders illustrate the general locations where the project will invest more resources to meet ecological connectivity objectives. Public and private lands near these CEAs are not part of the I-90 Project. The project may acquire private land near CEAs via purchases, easement, and/or federal land transfer. Modified CEA sections were enhanced to better meet ecological connectivity objectives.





# I-90 Snoqualmie Pass East Hyak to Easton Project



# DESIGN CONCEPTS

*What will the completed project look like?*

NOTE: The design concepts shown are based on a variety of alternatives.

Existing Gold Creek bridges



Proposed **Gold Creek bridges** Option A

Existing two-lane Snowshed



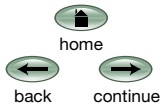
Proposed **Expanded six-lane Snowshed Portal** Alternative 1,2,3 (not shown)

Existing unconnected wildlife corridor



Proposed **Price / Noble wildlife overcrossing** Option D

Navigate



I-90 Snoqualmie Pass East

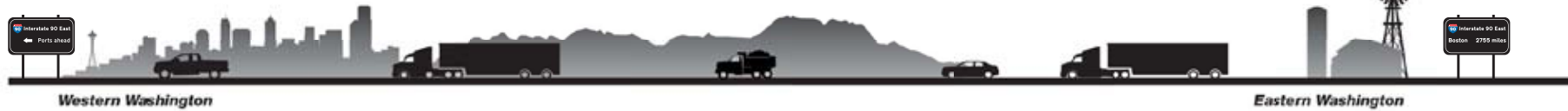




# I-90 Snoqualmie Pass East Hyak to Easton Project

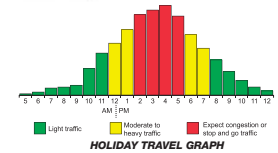


# TRANSPORTATION



## How will WSDOT improve transportation across Snoqualmie Pass?

Interstate 90 is a critical link connecting the large population and business centers of Puget Sound with the agricultural and other industries of Eastern Washington. WSDOT has plans to build a safer, more efficient and reliable highway from Hyak to Easton, securing I-90 as a primary statewide transportation corridor.



Truck traffic makes up a large volume of I-90 traffic



Trucks chain up on Snoqualmie Pass



Traffic back-ups along Keechelus Lake

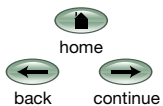
## How will WSDOT improve freight mobility?

WSDOT will improve freight mobility by adding an additional lane in each direction to reduce congestion, expanding chain up / off areas and improving illumination in those areas, widening shoulders, straightening sharp roadway curves, building a six-lane snowshed to reduce closures due to avalanche control, and replacing deteriorating pavement for a smoother, safer ride.

## How is freight affected by Snoqualmie Pass closures?

Highway closures due to snow storms, avalanche control work, and rock slides can cause shipment delays, resulting in negative impacts to the economy. Deteriorating pavement, congestion, falling rocks, sharp roadway curves, and wildlife crossing the highway create unsafe driving conditions and can cause costly damage to freight vehicles and cargo. Insufficient chain up / off areas create unsafe conditions for freight and emergency vehicles.

Navigate



I-90 Snoqualmie Pass East







# I-90 Snoqualmie Pass East Hyak to Easton Project



# CONSTRUCTION PHASING

## Hyak to Keechelus Dam Project

### How will the project be phased for construction?

The I-90 Snoqualmie Pass East Project will be split into three phases. The phasing is illustrated using the preferred alternative.

**Phase 1A** - WSDOT will begin construction in the Spring 2009. WSDOT will build a detour bridge at Gold Creek and include mitigation for lake storage impacts.

**Phase 1B** - WSDOT will build the expanded bridges over Gold Creek and Rocky Run Creek, add an additional lane in each direction, and add chain up / off capacity along the lake.

**Phase 1C** - WSDOT will add a new lane in each direction, build a new expanded snowshed, add bridges over Resort Creek.

**MAKING EVERY DOLLAR COUNT.**

Funding for the five-mile project is provided by the 2005 Transportation Partnership Fund.

**PHASE 1A**  
I-90/Hyak to Crystal Springs  
Lake Storage Mitigation and Detour

**SPRING 2009**

**PHASE 1B**  
I-90/Hyak to Snowshed Vicinity  
Add Lanes / Replace Bridges

**SPRING 2010**

**PHASE 1C**  
I-90/Snowshed Vicinity to Keechelus Dam  
Add Lanes / Snowshed

**SPRING 2011**

**Total project cost:**  
\$545 million



Navigate

home



I-90 Snoqualmie Pass East



# I-90 Snoqualmie Pass East Hyak to Easton Project



## ECOLOGICAL CONNECTIVITY

### What is the purpose of wildlife crossing structures?

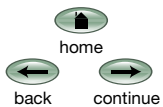
The I-90 Project is designing structures to accommodate streams and wildlife passage at 14 specific locations. These locations are called Connectivity Emphasis Areas (CEAs). The crossing structures will increase safety to the traveling public by reducing collisions between wildlife and vehicles, and will connect habitat that is currently separated by the highway.

### How will wildlife passage be improved?

#### WSDOT will:

- Replace the existing narrow bridges and fish-blocking culverts to accommodate fish and wildlife movements, with longer, wider bridges and culverts
- Add wildlife exclusion fencing to keep wildlife off the highway
- Add wildlife overcrossings at strategic locations

Navigate



A bobcat struggles up a snowbank created by WSDOT plowing



A deer wanders next to the Hyak interchange at milepost 55

### Will the I-90 Project affect water resources?

WSDOT has designed the I-90 Project to have substantial benefits to wetlands, stream channels, and riparian areas. WSDOT will restore habitat, connect wetlands, improve channel migration, enhance groundwater flow, and improve water quality.



WSDOT plans to build bigger bridges over the creek channel at Rocky Run Creek

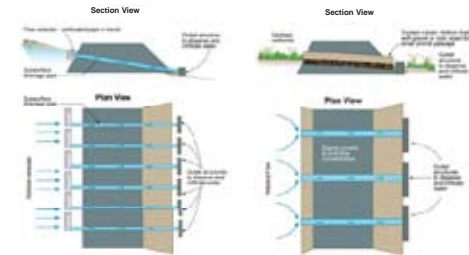


Bull trout reside in Keechelus Lake in the project area and are listed as threatened under the Endangered Species Act

### What is a hydrologic connectivity zone?

- Hydrologic connectivity zones (HCZs) are locations where moving water through the highway is important for habitat functions on both sides of the highway.
- HCZs link wetlands, shallow aquifers or other hydrologic features, and are important to stream and upland habitats.

#### Hydrologic connectivity zone (HCZs)





# I-90 Snoqualmie Pass East Hyak to Easton Project



## WILDLIFE MONITORING

### How is WSDOT proposing to monitor wildlife in the project area?

WSDOT has developed a fish and wildlife monitoring program to evaluate transportation management questions regarding the performance of crossing structures and wildlife fencing.

Under an agreement with WSDOT, Montana State University and Central Washington University began pre-construction monitoring in early 2008. These efforts are utilizing remotely activated cameras, hair collection devices, tracking and other techniques for fish and high- and low-mobility wildlife species.

Following construction, adaptive management of fish and wildlife related design elements will be guided by performance measures assessed by the wildlife monitoring program.



Black bear (*Ursus americanus*)



River otter (*Lutra canadensis*)



Deer (*Odocoileus sp.*)



Elk (*Cervus elaphus nelsoni*)



Raccoon (*Procyon lotor*)



Black bear (*Ursus americanus*)



Remote cameras like this are currently being used to capture images of wildlife. The cameras are triggered by the heat and motion of wildlife. This is a noninvasive method of monitoring what types of animals are present in the project area.

Navigate



home



back



continue



I-90 Snoqualmie Pass East





# I-90 Snoqualmie Pass East Hyak to Easton Project



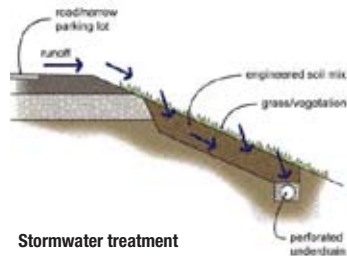
## MITIGATION PROJECT COMMITMENTS

### What are “best management practices”?

Best management practices (BMPs) are tools or actions to be used by contractors before, during and after construction to achieve a desired result by establishing factors such as the timing of construction, construction methods, or methods to protect specific resources.



Erosion control



Stormwater treatment

### What commitments have FHWA and WSDOT made related to compensatory mitigation?

Where environmental impacts remain, the lead agencies have committed to performing compensatory mitigation.

Commitments for compensatory mitigation include the actions the lead agencies will take to replace or substitute for unavoidable environmental impacts.



Wetland restoration



Stream and wetland restoration that accommodates fish and wildlife connectivity

Gold Creek Bridges - Design Concept proposed Option A

### What is wetland enhancement and restoration?

To mitigate unavoidable wetland impacts WSDOT will:

- Acquire lands with streams, wetlands and forested areas in order to preserve them
- Restore wetlands along Keechelus Lake by removing road fill
- Improve hydrologic reservoir storage systems by restoring historic water flow patterns

Navigate



home



back



continue



I-90 Snoqualmie Pass East





# I-90 Snoqualmie Pass East Hyak to Easton Project



## CULTURAL, ARCHEOLOGICAL AND HISTORIC RESOURCES

### PAST



Construction of Snowshed 1950

### The Lake Keechelus Snowshed Bridge

In 1950, WSDOT built this concrete snowshed to replace the wooden snowshed that had been in service for many years. In the late 1950s, the highway was expanded from two lanes to four lanes, leaving the eastbound lanes unprotected from the avalanche-prone area. The existing snowshed is listed on the National Historic Register.

### PRESENT



Existing two-lane Snowshed

### An Inadequate Structure

The existing snowshed is not long enough to cover the major avalanche paths at MP 58. The original snowshed was designed for a two-lane roadway that has since expanded to four lanes, and will now expand to six lanes. The snowshed clearance is too low for oversized loads and cannot be modified, and must be demolished.

### FUTURE



Snowshed Portal Design Concept

### Expanded Snowshed

Three of four alternatives, including the Preferred Alternative, will build the new snowshed. The new snowshed will be designed using the architectural Cascadian theme, using native rock, stone and wood textures and images matching the mountain environment.

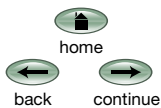
### What commitments have been made regarding Historic Resources?

- The project will avoid impacts to 57 of the 58 cultural or historic resources that were found in the area
- An Unanticipated Discovery Plan, coordinated with Agencies and Tribes, will be in place to guide contractors and agencies in the proper steps to avoid impacts
- Government to government relations with Tribes that began in 1999 will continue through project construction
- A Memorandum of Agreement signed by FHWA, WSDOT and DAHP identified mitigation measures for removal of the Lake Keechelus Snowshed Bridge

### Why will the project incorporate a Cascadian theme into the project designs?

The Cascadian theme will give the project area a uniform look that is consistent with National Scenic Byway and US National Forest Service guidelines. This design theme will use native rock, stone and wood textures and images matching the mountain environment. The guidelines for this design were developed with the Mountains to Sound Greenway and the US Forest Service.

Navigate



Luminaire



Interpretive sign



Retaining wall



Highway sign



Bridge barricade and guardrail

NOTE: Design concept to be used where applicable

A collaborative effort with





# ***I-90 Snoqualmie Pass East Hyak to Easton Project***



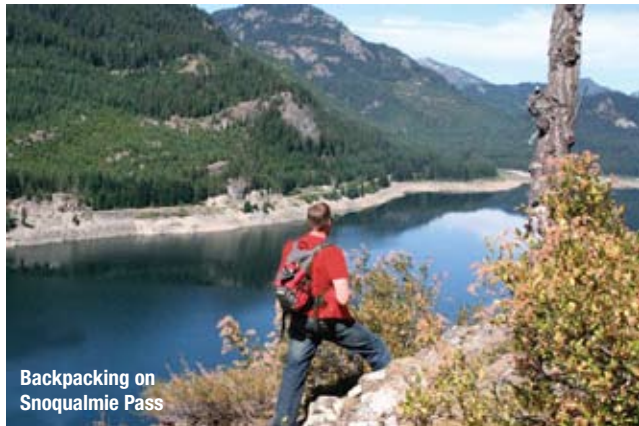
# **RECREATION**

## ***How will the project improve recreational activities along I-90?***

The I-90 Project will benefit users of the many recreational activities found along the project corridor with reduced travel times and increased roadway safety. WSDOT has also committed to making improvements to the Crystal Springs and Cabin Creek Sno-Parks after using them as staging and stockpiling sites during construction of the project.

## ***How will construction impact recreation on I-90?***

Temporary impacts to recreation from construction may include changes to access, detours, or noise. When funding becomes available for the remaining project area, Price Creek Sno-Park will be closed. This closure is the result of conflicts with federal safety standards for Interstate access and connectivity emphasis area (CEA) locations to the east and west.



**Backpacking on  
Snoqualmie Pass**



**WSDOT will  
continue to keep lanes  
open during construction**



**Price Creek  
Sno-Park**



**Gold Creek  
Sno-Park winter recreation**

Navigate



home



back



continue



I-90 Snoqualmie Pass East